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Recent advances on mesoscale variability in the Western Mediterranean Sea: complementarity between satellite altimetry and other sensors

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Satellite altimetry has provided a unique contribution to the global observation of mesoscale variability, the dominant signal in the ocean circulation at mid and high latitudes areas. In particular, it is now possible to quantify and monitor surface mesoscale eddies. However, satellite altimetry alone only provides surface information and is limited by temporal and spatial coverage. Thus, to fully understand the three-dimensional variability at a wide range of spatio/temporal scales it is necessary to complement altimetry data with alternative remote and in-situ sensors.

In this study we review recent advances on mesoscale variability as seen by the merging of altimetry and independent observations in the Western Mediterranean, where the circulation is rather complex due to the presence of multiple interacting scales, including basin, sub-basin scale and mesoscale structures. The challenges of these processes imply therefore high-resolution observations and multi-sensor approaches. Accordingly, multi-platform experiments have been designed and carried out in the different sub-basins of the Western Mediterranean Sea highlighting the need of synergetic approaches through the combined use of observing systems at several spatial/temporal scales, with the aim of better understanding mesoscale signals.